

WHAT IS CLAIMED IS:

1. A color changeable pixel, comprising:

a first plate;

an operating plate, wherein the operating plate is settled in parallel with the  
5 first plate;

a second plate, the second plate settled between the first plate and the operating  
plate in parallel and forming a cavity with the first plate, wherein an incident light from  
one side of the first plate is modulated and only specific frequency light reflects by the  
second plate and the second plate shifts by the voltage added on the third plate to  
10 change the distance between the first plate and the second plate to change the frequency  
of the reflected light.

2. The color changeable pixel of claim 1, wherein the first plate at least  
comprises:

15 a substrate;

an absorption layer; and

a dielectric layer.

3. The color changeable pixel of claim 2, wherein the substrate is a transparent  
20 conductive substrate.

4. The color changeable pixel of claim 2, wherein a material for forming the  
dielectric layer is silicon oxide, silicon nitride or metal oxide.

5. The color changeable pixel of claim 2, wherein the absorption layer is made from metal.

6. The color changeable pixel of claim 2, wherein the substrate is made from ITO or IZO.

7. The color changeable pixel of claim 2, wherein the first plate and the second plate are selected from the group consisting of narrowband mirror, broadband mirror, non-metal mirror, metal mirror and the combination thereof.

10

8. The color changeable pixel of claim 1, wherein the second plate is a deformable plate.

9. The color changeable pixel of claim 1, wherein the second plate is a moveable plate.

10. The color changeable pixel of claim 1, wherein the second plate at least comprises a dense material or a semi-transparent material.

11. The color changeable pixel of claim 10, wherein the semi-transparent material is selected from the group consisting of ITO, IZO, thin metal and the combination thereof.

12. The color changeable pixel of claim 1, further comprising a plurality supports positioned between the first plate and the second plate, and the second plate and the operating plate.

5        13. An optical interference color planar display, comprising:

a control circuit;

a driver circuit; and

a modulator array which comprises:

a first plate;

10        a second plate; and

an operating plate,

wherein the control circuit connects to the operating plate to control the length of a cavity of a modulator of the modulator array for reflecting a light with a special wave length, the driver circuit connects to the first plate and the second plate to control the on  
15 or off of the modulator.

14. The optical interference color planar display of claim 13, wherein the first plate at least comprises:

a substrate;

20        an absorption layer; and

a dielectric layer.

15. The optical interference color planar display of claim 14, wherein the substrate is a transparent conductive substrate.

16. The optical interference color planar display of claim 14, wherein a material for forming the dielectric layer is silicon oxide, silicon nitride or metal oxide.

5           17. The optical interference color planar display of claim 14, wherein the absorption layer is made from metal.

18. The optical interference color planar display of claim 14, wherein the substrate is made form ITO glass or IZO glass.

10

19. The optical interference color planar display of claim 13, wherein the first plate and the second plate are selected from the group consisting of narrowband mirror, broadband mirror, non-metal mirror, metal mirror and the combination thereof.

15           20. The optical interference color planar display of claim 13, wherein the second plate is a deformable plate.

21. The optical interference color planar display of claim 13, wherein the second plate is a moveable plate.

20

22. The optical interference color planar display of claim 13, wherein the second plate at least comprises a dense material or a semi-transparent material.

23. The optical interference color planar display of claim 22, wherein the semi-transparent material is ITO or IZO.

24. The optical interference color planar display of claim 13, further comprising  
5 a plurality supports positioned between the first plate and the second plate, and the second plate and the operating plate.